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Name: Stephen van Staden Date: Monday, 04 November 2013 Ref: SAS/SLR 01122012

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Att: Linda Munro

RE: FLORAL, FAUNAL AND WETLAND SPECIALIST INPUT AS PART OF THE ENVIRONMENTAL ASSESSMENT AND AUTHORISATION PROCESS FOR THE CONSTRUCTION OF THE IMPALA PLATINUM BACKFILL LINE CORRIDOR, AS PART OF THE IMPALA 18 SHAFT AND ASSOCIATED INFRASTRUCTURE PROJECT

1. INTRODUCTION

Scientific Aquatic Services (SAS) was appointed to provide specialist input in terms of the floral, faunal and wetland ecology as part of the environmental assessment and authorisation process for the construction of the proposed Impala Platinum backfill line corridor and railway siding in the vicinity of the Impala Platinum Mine. The study area, comprising of linear infrastructure of approximately 4km in length, runs between the existing 17 Shaft and 10 Shaft, the latter which is located in the vicinity of the existing Tailings Storage Facility (TSF).

Scientific Aquatic Services CC CK 2003/078943/23 VAT Reg No 4020235273 Stephen van Staden Member The ecological assessment forms part of the Impala 18 Shaft project and was conducted on 29 October 2013.

2. FINDINGS

2.1 LAND USE AND CONSERVATION CHARACTERISTICS

In terms of relevant Acts, policies and guidelines, the following are applicable:

- According to the Mining and Biodiversity Guideline (2012) the majority of study area falls within a High Biodiversity Importance area.
- The study area falls almost entirely within a Threatened Terrestrial ecosystem, namely Marikana Thornveld, which is listed as Vulnerable, as identified under the National Environmental Management: Biodiversity Act (Act 10 of 2004).
- The eastern portion of the study area falls within falls within an area earmarked for expansion of a National Protected Area as part of the National Protected Area Expansion Strategy (NPAES).

2.2 FLORA

The study area is situated in the Savanna Biome, within the Central Bushveld Bioregion and falls within the Marikana Thornveld Vegetation type (Mucina & Rutherford 2006).

Two broad habitat units were identified within the study area, namely Impacted Bushveld Habitat Unit and Transformed Habitat Unit. The Impacted Bushveld Habitat Unit covers the majority of the study area and consists of areas historically utilised for agricultural purposes where vegetation can be seen to be in a recovery phase, as well as areas impacted by high levels of grazing, trampling and edge effects from existing infrastructure (Figure 1). These areas are considered to be of low ecological importance and sensitivity and lowered conservation value due to the alteration in floral species composition and vegetation structure as a result of the abovementioned impacts (Figure 1).

Included in the Impacted Bushveld Habitat Unit, and as observed along the proposed development alignment, are portions of rocky bushveld that have not previously been cultivated and are considered to have a higher PES in relation to the remainder of the habitat unit (Figure 1). It should be noted that although these areas have seen less disturbance, it occurs as patches within the larger landscape and have also generally been impacted by livestock trampling, timber harvesting, alien species and bush encroachment. The rocky bushveld areas are furthermore well represented within the region, and loss thereof a result of the proposed infrastructure development, will not significantly affect floral conservation in the region. These areas are considered to have a moderate ecological sensitivity as they provide habitat for an increased diversity of floral and faunal species.

Overall vegetation within the Impacted Bushveld Habitat Unit is sparse and floral species include trees such as *Acacia karroo, Searsia lancea, Ziziphus mucronata* and *Dichrostachys cinerea*, as well as forbs such as *Aloe gratheadii* var *davyana*, *Vernonia oligocephala*, *Indigofera daleoides*, *Ledebouria ovatifolia*, *Convolvulus sagiitatus*. The grass layer is dominated by *Eragrostis curvula*, *Heteropogon contortus*, *Hyparrhenia hirta* and *Cynodon dactylon*.



The Transformed Habitat Unit includes areas where the vegetation has been completely transformed by existing mining infrastructure and agricultural activities (Figure 2). Vegetation within these areas has a low ecological sensitivity and conservation value. This habitat unit is present within the central portion of the study area, where the proposed corridor crosses a sunflower field and well as the eastern and western portions in the vicinity of the existing 17 and 10 Shafts.



Figure 1: The Impacted Bushveld Habitat Unit, with rocky bushveld indicated on the right.



Figure 2: The Transformed Habitat Unit, with mining infrastructure indicated on the left and agricultural fields on the right.

Alien and weed species occur predominantly within the Transformed Habitat Unit and existing road reserves to the south of the proposed infrastructure alignment and include *Opuntia ficus-indica*, *Schkuhria pinnata*, *Sesbania bispinosa*, *Asclepias fruticosa*, *Nicotiana glauca*, *Melia azedarach*, *Tamarix ramosissima*, *Tagetes minuta* and *Zinnia peruviana*.

Two Red Data Listed (RDL) species are listed for the 2527CB quarter degree square within which the study area is located, namely *Frithia pulchra* and *Aloe peglerae*. Neither of these plant species were encountered within the proposed development area and it is highly unlikely that any such specimens will occur, due to lack of suitable habitat for this species as well as grazing activities, agriculture and mining development in the area.

One protected tree species, namely *Sclerocarya birrea* subsp. *africana* (Marula) is present to the south of the study area along the western portion of the alignment. Although this tree



falls outside of the study area, care should be taken to avoid damage to these trees during construction of the proposed infrastructure. This species is protected under the National Forests Act of 1998 (Act 84 of 1998). In terms of this act, protected tree species may not be cut, disturbed, damaged or destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold - except under licence granted by the Department of Water Affairs (or a delegated authority). Applications for such activities should be made to the responsible official in each province. No tree or forb species protected under the Transvaal Nature Conservation Ordinance (No 12 of 1983) were noted.

Loss of habitat or biodiversity in terms of flora and vegetation as a result of the proposed development is not regarded as being significant due to the relatively narrow development footprint, the large area of similar veld which will remain unaffected, overall low floral biodiversity and sparse vegetation cover and the low probability of RDL taxa being present in this area.

2.3 FAUNA

No mammal species, apart from domestic livestock, were noted during the field assessment, likely due to the limited duration of the assessment. Due to the close proximity of the study area to an existing road and railway siding, as well as the operational 10, 15 and 17 Shafts very close to the study area, it is unlikely that a high abundance or diversity of larger mammal species will permanently reside in the immediate vicinity of the study area. Smaller mammal species such as shrews, mongoose and rodents may however be permanently or occasionally present.

A number of avifaunal species were noted during the field assessment. These species were most abundant within the rocky bushveld areas within the Impacted Bushveld Habitat Unit. All avifaunal species noted were commonly occurring species. In addition to those species listed as part of the previous study in the area include *Macronyx capensis* (Cape longclaw), *Laniarius atrococcineus* (Crimson-breasted shrike), *Vanellus armatus* (Blacksmith lapwing) and *Delichon urbicum* (Common house martin).

Two reptile species were noted within the rocky bushveld areas of the Impacted Bushveld Habitat Unit, namely *Trachylepsis varia* (striped skink) and *Agama satra* (Southern rock agama). The rocky bushveld areas may potentially host a number of other smaller reptile species.

No amphibian species were noted during the assessment and it is unlikely that a high abundance of such species will occur within the study area due to the lack of water resources in the area in the form of rivers of dams.

The proposed development, due to its location adjacent to an existing road to the south and an existing railway to the west is unlikely to significantly impact on migratory corridors. Larger faunal species unable to pass underneath the proposed pipeline would still be able to move around the area from the east. The rocky bushveld areas and rocky outcrops to the north and south of the study area are important in terms of faunal migration by providing islands of habitat within a largely homogeneous area and the development footprint within these areas should remain as small as possible.



It is improbable that any sensitive or RDL faunal species will utilise the subject property or areas directly adjacent to the proposed development alignment for habitation or foraging purposes due to the impacts of anthropogenic and mining activity in the vicinity of the study area. Thus, the proposed Impala backfill line corridor development does not pose a significant threat to faunal conservation in the area.

2.4 WETLANDS

The study area does not encroach or traverse any wetlands or riparian areas and no wetlands occur within 100m of the proposed development. The proposed development is therefore unlikely to directly impact on wetland resources within the region.

3. POTENTIAL IMPACTS

Due to this assessment forming part of the proposed Impala 18 Shaft and associated infrastructure, all potential impacts and impact ratings remain applicable to this report, although the impact on floral and faunal life from the backfill line corridor itself will be lower when assessed in isolated due to the smaller development footprint.

4. **RECOMMENDATIONS**

After the conclusion of this assessment, the following recommendations are empahsised:

- A sensitivity map has been developed for the study area (Figure 3), indicating rocky bushveld areas which are considered to be of increased ecological importance as well as the location of a *Sclerocarya birrea* var *caffra* tree. It is recommended that this sensitivity map be considered during all development phases to aid in the conservation of floral and faunal habitat within the study area.
- The overall areas of disturbance footprints should be kept as small as possible and the boundaries of the footprint areas should be clearly defined.
- Planning of temporary roads and access routes should take the site sensitivity plan into consideration. If possible, such roads should be constructed a distance from more sensitive areas identified and not directly adjacent thereto in order to minimise loss of rocky bushveld habitat.
- Edge effects of all construction and operational activities, such as erosion and alien plant species proliferation need to be strictly managed within the development areas.
- All soils compacted as a result of construction activities falling outside of development footprint areas should be ripped and profiled.
- Informal fires in the vicinity of the study area should be prohibited during all development phases.
- > No trapping or hunting of fauna may be allowed during any phase of the project.

Yours Faithfully,

Digital Documentation Not Signed For Security Purposes

Stephen van Staden Pr. Sci. Nat.





Figure 3: Sensitivity Map for the study area.

